

**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appellants: <b>Richards, Dan et al.</b>	§	Confirmation No.: <b>1876</b>
	§	
Application No.: <b>10/522,627</b>	§	Art Unit: <b>1792</b>
	§	
Filing Date: <b>January 31, 2005</b>	§	Examiner: <b>Golightly, Eric Wayne</b>
	§	
Title: <b>Apparatus and Method for</b>	§	Attorney Docket No.: <b>CEDA001</b>
<b>Cleaning a Coker or other Vessel</b>	§	

**(A) REPLY BRIEF: 37 C.F.R. §41.41**

This brief is in furtherance of the Notice of Appeal filed in this application on June 25, 2009.

## **(B) STATUS OF CLAIMS**

### **1. Status of All Claims in the Proceeding**

Claims rejected: 43-67 and 69-72.

Claims allowed or confirmed: None.

Claims withdrawn: 68.

Claims objected to: 62 and 68.

Claims canceled: 1-42.

### **2. Identification of Claims being Appealed**

The claims on appeal are 43-67 and 69-72.

(C) **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

**Ground 1**

Claims 43-47, 50-52 and 70 stand rejected under 35 U.S.C. §102(a) and (e) as being anticipated by Lumbroso, et al., US Patent No. 4,828,651 (referred to as “Lumbroso” below).

**Ground 2**

Claims 53-57 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lumbroso.

**Ground 3**

Claims 48, 49, 58-62, 69, 71 and 72 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lumbroso in view of Clapp, et al., US Patent No. 4,799,554 (referred to as “Clapp” below).

**Ground 4**

Claims 64-67 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lumbroso in view of Slator, US Patent No. 3,285,485 (referred to as “Slator” below).

**Ground 5**

Claims 63 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Lumbroso in view of Clapp, and further in view of Harvestine, US Patent No. 6,206,317 (referred to as “Harvestine” below).

**Ground 6**

Claim 61 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention.

(D) **ARGUMENT**

**Introduction**

1. In response to Appellants' elaborate and substantiated Appeal Brief of October 26, 2009, an Examiner's Answer was submitted which is believed to be non-compliant. For each rejection under 35 U.S.C. 102 or 103 where there are questions as to how limitations in the claims correspond to features in the prior art, the examiner *must* compare at least one of the rejected claims feature by feature with the prior art relied upon in the rejection. MPEP 1207.02 (See under "(A) CONTENT REQUIREMENTS FOR EXAMINER'S ANSWER", item (9)(e)). The comparison *must* align the language of the claim side-by-side with a reference to the specific page, line number, drawing reference number, and quotation from the prior art, as appropriate. Id. The Examiner's Answer does not comply with these requirements.
2. Moreover, although Appellants' submitted a petition for extension of time with associated fees of \$490.00, the Examiner's Answer was not transmitted within the allotted two month time-frame. See MPEP 1207.02, ¶ 1, "The examiner should furnish the appellant with a written answer to the appellant's brief within 2 months after the receipt of the brief by the examiner." The PAIR database indicates Appellant's brief was lodged 10/26/2009 and that the "Date Forwarded to Examiner" is 11/13/2009. The Examiner's Answer was transmitted 01/22/2010. The transmission date is beyond the allotted 2 month time-frame.
3. The present application traces its priority date (12/8/2002) to a Canadian application. Such application has since matured into Canadian Patent

No. 2,397,509, granted 02/20/2007.

### **The Plain Meaning of Claim Terminology under Current US Practice**

4. As to the plain meaning of patent claims, changes in US Patent case law have been quite dynamic over the last decade. It would seem that change is the only thing that is guaranteed. In fact, future changes would seem more certain than ever given the ever moving forces of globalization and efforts toward harmonization (although patent laws are historically territorial).
5. Changes in U.S. patent prosecution have kept the practice both challenging and interesting. Skilled judges, examiners and practitioners are perhaps now more relevant than ever and we must continually challenge ourselves to accept and apply these changes. This suggests another point, which is that such changes are quite relevant in terms of this appeal, and more specifically, in terms of the “ordinary” and the “customary” meaning ascribed to terms in the present claims and in terms of ‘functional language’ appearing in the subject apparatus claims.
6. The ordinary and customary meaning of a claim term is *the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention*, i.e., as of the effective filing date of the patent application. MPEP 2111.01 (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*)). It is the use of the words in the context of the written description and customarily by those skilled in the relevant art that accurately reflects both the “ordinary” and the “customary” meaning of the terms in the claims. MPEP 2111.01. For example, in one case, since there was no express definition given for

the term “URL” in the specification, the term should be given its broadest reasonable interpretation consistent with the intrinsic record and take on the ordinary and customary meaning attributed to it by those of ordinary skill in the art. *Id.* (citing *ACTV, Inc. v. Walt Disney Company*, 346 F.3d 1082, 1092 (Fed. Cir. 2003)). The ordinary and customary meaning of a term may be evidenced by a variety of sources, including the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. MPEP 2111.01 (citing *Phillips* at 1314). The meaning of a particular claim term may be defined by implication, that is, according to the usage of the term in the context in the specification. MPEP 2111.01 (citing *Phillips*).

7. ‘Functional language’.

- a. Indeed, functional language in a means-plus-function format is explicitly authorized by statute. *Microprocessor Enhancement Corp. v. Texas Instruments Inc. and Intel Corp.*, 520 F.3d 1367 (Fed. Cir. 2008). Functional language may also be employed to limit the claims *without using* the means-plus-function format. *Id.* (for example, “a spring for urging” is narrower than “a spring”). Moreover, where the claim uses functional language but recites insufficient structure, § 112, ¶ 6 may apply despite the lack of “means for” language. *Id.*
- b. Although the Appeal Brief indicated “not applicable” under the section entitled “Summary of Each Means Plus Function and Step Plus Function Claim”, pursuant to current law (recited in the preceding paragraph), such does not mean that there is no

functional language employed to limit the claims or that the Board cannot construe § 112, ¶ 6 as being applicable to functional language recited in the claims.

8. The level of ordinary skill in the art.

- a. The prior art of record may be used as facts of record pertaining to the level of ordinary skill in the art. MPEP 2141.03 §I, last ¶, and §II. The following prior art results from separate searches performed at the USPTO, the EPO, the Canadian Intellectual Property Office and the three Information Disclosure Statements (“IDS”) lodged by the Appellants.
- b. A publication from The Canadian Journal of Chemical Engineering, Volume 78, April 2000 is of record as per the “IDS” filed April 22, 2005. This publication, “The Role of the Vapour Phase in Fluid Coker Cyclone Fouling: Part 1. Coke Yields” by Mallory et al., and referring to the very first ¶ of the submission identifies the problem of cycling fouling in fluid cokers; that the cyclones are located above the fluid bed and are responsible for separating solid coke particles from the vapour stream before it enters the scrubbing section of the coker; that excessive buildups of coke have been noted to form in various parts of each cyclone, as shown in Figure 1 (of the referenced paper); and that these coke formations lead to an increased pressure drop through the coker and a reduction of the overall efficiency of the cyclones. It can be observed in Figure 1 of this paper that a snout that bends toward the horizontal appears at the very top of the coker cyclone, and that the problematic coke formations build-up *inside* of the cyclone, some at the very bottom.

- c. Walker, US Patent No. 3,920,537, is also of record as per the IDS filed April 22, 2005. Walker addresses the cleaning of coke deposited in cyclone separators of a fluid coking unit, such coke deposits resulting in the increase of the pressure drop through the cyclone from about 1-4 psi (when clean) to about 10-12 psi. Walker '537 at col. 2, lines 55-68. Walker addresses this problem by inserting a lance through a nozzle in the side of the reactor wall and into the vapour cyclone discharge nozzle (i.e. the snout). Id. at col 3, lines 2-4. Pressurized water is fed through the lance and fed to the discharge nozzle. Id. at col. 3, lines 5-27. This breaks up the coke deposit after-which the lance is withdrawn. The lance does not extend beyond the entrance to the snout according to a reasonable interpretation of the Walker disclosure. Also, the Walker process is performed 'on stream' without disturbing the operation of the reactor and the downstream refining equipment. Id. at col 2, lines 22-26.
- d. Lumbroso, US Patent No. 4,828,651 (priority application filed 1987), is the primary reference cited against the Appellants' application. Lumbroso addresses the situation where a coker reactor is actually *taken out of service* so that it can be decoked, load injection is diverted to a second empty reactor, and the reactor to be decoked is cleared of residual hydrocarbons, cooled and opened at the top and the bottom. Lumbroso '651 at col. 1, lines 5-39. Lumbroso seeks to remove the scaffolding from the top of the reactor 2 to be decoked and to vertically drop a flexible tube 10 with a turbine 11 located at the end of the flexible tube 10 into the reactor 2 through an opening located top-center of the reactor.



Lumbroso '651 at col. 1, lines 42-54. If the turbine 11 is insufficiently heavy, a relatively heavy additional mass 12 enables weight borne by the flexible tube 10 to be increased. Id. at col. 3, lines 58-60. The flexible tube 10 is kept in line with the axis of the reactor 2 by passing the flexible tube 10 over a guide pulley 13. Id. at col. 3, lines 60-62.

- e. "The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry." MPEP 2141.03 §I.

### **The Appellants' Specification (i.e. the intrinsic evidence of record)**

- 9. The Applicant's specification with reference to Figs. 1-3, and page 8, line 29 to page 10, line 20 includes intrinsic evidence as to cleaning a dense phase cyclone coker vessel 102 while the vessel 102 is in operation. An elongated flexible conduit 104 including coiled tubing 108 is insertable through an elongated rigid conduit 106 into the vessel 102. The elongated flexible conduit 104 includes coiled tubing 108. An insertion device 112 is used for inserting the flexible conduit 104 through the rigid conduit 106 into the vessel 102. The rigid conduit 106 includes a rigid shroud 116 extending into the vessel 102. The rigid shroud 116 is insertable through an elongated rigid valve assembly 122 extending through the wall 120 of the vessel including an existing valve 124 and a rigid pipe 126 (extending through both sides of the wall 120). A first sealing device 130 seals a gap between the flexible conduit 104 and the rigid conduit 106 to prevent hot operational gases from escaping the vessel 102, and thereby preventing an operator from being injured by

such gases which may exceed 450°C (850°F). A second sealing device 134 seals a gap between the shroud 116 and the elongated rigid valve assembly 122 to prevent hot gases or other materials from escaping through the gap between the shroud 116 and the elongated rigid valve assembly 122.

10. With reference to the specification Figs. 75-77, and page 17, line 17 to page 18 (all), the coiled tubing 108 transports high pressure water (i.e. at least 5,000 psi and more) out the cleaning nozzle 700 and into the cyclone snout 602. The injector assembly 114 further forces the coiled tubing 108 through the mouth 702 of the cyclone snout 602 and downward through the gas tube 604 and into the vicinity 608 of the dip leg thereby removing coke deposits from inside of the cyclone all the way down to the vicinity 608 of the dip leg while the reactor is in operation mode.

**The “Rigid Conduit” Element is Recited in all of the Independent Claims (Grounds of rejection 1-5 hinge and fail on this basis alone)**

11. The Examiner’s Answer has maintained that the “mass 12” of Lumbroso is or teaches “rigid conduit” within the meaning of Appellants’ claims. This assertion is in error. Appellants’ rigid conduit 106 (Figs. 2-3; and spec. pg. 14, LL. 20-29) includes the rigid shroud 116 and serves to support the coiled tubing 108 so that the coiled tubing 108 can extend all the way down through the snout 602 to clean in the vicinity of the dip leg 608. Lumbroso’s mass 12 is simply a mass or a weight with a hole in it to seat on the turbine 11. The mass 12 is not a “rigid conduit”, just as a fishing weight having a loop for securing to a fishing line is not a

rigid conduit. The ordinary or the customary meaning of a “rigid conduit” is not that of a mass with a means of seating, and one of ordinary skill in the art would not seek to support the elongated flexible conduit with a mass for weighting a turbine.

12. The Examiner’s Answer erroneously attempts to articulate a reading of the mass<sup>12</sup> as being a conduit “... since the flexible hose passes through the mass to a turbine...” Ex. Answer at pg. 14, the last line to pg. 15, LL. 1-3. But one of ordinary skill in the art would not reasonably or remotely consider the same especially upon reading the intrinsic evidence of the specification. First, as mentioned the Lumbroso mass 12 is only a weight. Second, it not intended to support the hose 10 of Lumbroso. Third, and rebutting the examiner’s contention, this would go against the context of the Appellants’ claims as interpreted by the specification. The mass 12 is not intended to allow the hose 10 to pass through it. The mass 12 seats on the turbine. If the mass 12 is attached at the end where the reel 5 appears, the mass 12 passes over the hose and not *vice versa*. And last, further rebutting the examiner’s contention, the mass 12 is quite likely attached to the hose 10 at the end of the turbine 11 prior to the attachment of the turbine 11 in which case the mass 12 passes onto the end of the hose 10.

13. The examiner’s interpretation of “rigid conduit” simply cannot stand as a reasonable interpretation according to one of ordinary skill in the art. For this reason alone all of the appealed grounds of rejection 1-5 must fail.

**Lumbroso does not teach an elongated flexible conduit insertable through the rigid conduit into the vessel (Ground of rejection 1)**

14. Functionally, the Lumbroso hose 10 is not inserted through the mass 12 in order to enter the reactor vessel 2. The Lumbroso hose 10 is in fact never inserted through the mass 12. As discussed above under 7.a. functional language may also be employed to limit the claims *without using* the means-plus-function format. One of ordinary skill in the art would understand what “*an elongated flexible conduit insertable through the rigid conduit into the vessel*” means especially upon reading the intrinsic evidence of the specification.

**The Examiner’s Answer erroneously indicates that a gap is a positive structural feature when it is in fact a void (Ground of rejection 1)**

15. The Examiner’s Answer as to claim 45 indicates that “... the gap itself is not positively recited as a limiting structural feature of the claimed apparatus...” Ex. Answer at pg. 15, LL. 13-14. A gap is a void. So it is claimed between the flexible conduit and the rigid conduit. The gap is also claimed as being sealed by a sealing device which could be interpreted as another functional limitation (i.e. a device for sealing). Lumbroso’s hose 10 does not seal between the hose 10 and the mass 12, and there is no purpose in Lumbroso to seal at this junction as well. As mentioned in paragraph 9 above, the Appellants’ specification mentions *a first sealing device 130 seals a gap between the flexible conduit 104 and the rigid conduit 106 to prevent hot operational gases from escaping the vessel 102, and thereby preventing an operator from being injured by such gases which may exceed 450°C (850°F)*. The

context is that this feature is critical to protect the operational workers from serious injury. The contention that Lumbroso's layered hose 10 teaches such a sealing device for the defined gap must fail because it is not a reasonable interpretation consistent with the intrinsic record.

**Lumbroso's hose 10 does not extend beyond the mass 12, and much less to the inside of a coker cyclone to remove deposits therein (Ground of rejection 2)**

16. The Examiner's Answer at pg. 16, the last paragraph (and at pgs. 18 to 19, top paragraph) fails to consider the invention as a whole. Claim 57 for example is dependent upon claim 56, which is dependent upon claim 55, which is dependent upon claim 54, which is dependent upon claim 53, which is dependent upon claim 52, which is dependent upon either of claims 43 or 44. Take for example claim 57. Upon reading the specification, the context here *as a whole* is that the flexible conduit extends *beyond* the innermost end of the rigid conduit (as Lumbroso's hose 10 does not with respect to the mass 12), sufficiently long into the coker vessel (claim 52), sufficiently long into the snout (claim 54) of the cyclone and all the way down to into the vicinity of the dip leg (claim 57). Lumbroso does not even mention a cyclone.

17. Lumbroso's turbine 11 drops vertically down the center axis of the reactor 2. The snouts of the cyclone open to the horizontal and are spaced a certain radius away from the vertical center axis. See Figs. 75-76 of Appellants' specification. So although one of ordinary skill in the art might realize that the coker has a cyclone he/she would realize the snout opens laterally and would not implement the vertical drop

down system of Lumbroso for cleaning inside of the cyclone utilizing a worker within this worker hazardous environment.

**The prior art does not teach a rigid conduit which is insertable through an elongated rigid valve assembly extending through a wall of the vessel (Ground of rejection 3)**

18. Elongated connotes a shape or a form. So the position taken that the circular valve assembly disclosed in Clapp (Fig. 1, ref. 31) is an 'elongated' valve assembly is not tenable. Ex. Answer, pg. 20, the last 3 lines.

19. As discussed above under 7.a. functional language may also be employed to limit the claims *without using* the means-plus-function format. One of ordinary skill in the art would understand what the recitation of *a rigid conduit which is insertable through an elongated rigid valve assembly* means especially upon reading the intrinsic evidence of the specification.

20. One of ordinary skill in the art would not consider Clapp as teaching a means to insert Clapp's larger diameter tubing 23 through a smaller diameter valve 31 in the nature of as required by Appellants' claim 48.

**The Examiner's Answer asserts mere vague conclusions as to what one of ordinary skill in the art would find obvious without any supporting reasoning (Ground of rejection 3).**

21. It is erroneously asserted that the skilled artisan should have

found it obvious to include a sealing device between the rigid conduit and a valve assembly in order to inhibit the escape of pressurized fluid. Ex. Answer at pg. 21, the last line to pg. 22, the first 2 lines; and again at pg. 23, lines 12-14. This assertion lacks any support and analysis of the claimed invention as a whole including that the cited art does not even contemplate the claimed flexible conduit insertable through the rigid conduit with rigid conduit insertable through the elongated rigid valve assembly. The examiner bears the burden of establishing the prima fascia case and must do so without citing mere conclusory statements.

**The term “high” in claim 61 is not vague when considering it is according to one of ordinary skill in the art and as supported by the intrinsic evidence (Ground of rejection 6)**

22. The Examiner’s Answer continues to maintain that the term “high” in claim 61 is vague. Ex. Answer at pg. 27, LL. 1-8.

23. Appellants’ state *[t]he high pressure pumps (not shown) force the water... at a high pressure... which... is at least 5,000 psi... [m]ore particularly, in this embodiment, the water pressure is 10,000 psi, for cleaning hardened coke from the cyclone snout 602 and other components of the vessel 102.* See the specification at pg. 18, LL. 12-15. It is submitted that one of ordinary skill in the art upon reading this would know or realize without routine experimentation that the “high” pressure is relative to the water pressure delivered by the water pumps; the ratings of water pressure pumps as needed to remove coke deposits; and the water pressures that for example the cyclone snout could withstand without causing damage to the snout. Claim 61 is

definite to one having ordinary skill in the art.

**This brief does not replace the original Appeal Brief**

24. Appellants' maintain all of the original arguments and points of error from the Appeal Brief although not individually argued in this Reply Brief.

**Conclusion**

Appellants have pointed out with specificity the errors in the rejections, and the claim language that renders the claims patentable over the reference(s) and combinations thereof. Appellants respectfully request that the rejection of all pending claims be reversed.

Respectfully Submitted,

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